

DETECTION OF FOREST INSECT ACTIVITY ON THE
SHENANDOAH NATIONAL PARK, Va

By

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INTRODUCTION

On June 19-22, Charles Dull, FIDM met with Rangers Bud Phillips and Chris Ward, Shenandoah National Park to conduct a survey of forest insect activity on the park. For the second consecutive year the survey was conducted in four phases:

1. Aerial detection survey
2. On-site examinations of damage observed during the aerial survey
3. Gypsy moth survey
4. Parasite evaluation.

METHODS

1. An aerial survey was conducted on June 19 to detect the presence of forest insect and disease activity within the park. Approximately 225,000 acres were surveyed at 100% coverage. Standard sketchmap procedures were employed in a Cessna 182 flying at 1000 feet above the terrain.

2. On-site examinations were made of areas detected during the aerial survey, displaying off-color or abnormal foliage characteristics, to determine the cause of the damage.

3. The aerial survey was timed to coincide with the period of maximum defoliation activity by the gypsy moth, *Lymantria dispar* (L.). In addition, a ground survey was directed at detecting low density populations of the gypsy moth at campsites and recreation areas.

In May 1979, FIDM personnel placed 40 burlap band traps at the following locations:

- (1) Dickey Ridge Visitor Center
- (2) Mathews Arm Campground
- (3) Big Meadows Campground
- (4) Loft Mountain Campground.

The locations were considered potential infestation centers since the movement of recreational vehicles into these high use visitor areas could result in the accidental transporting of viable gypsy moth life forms as "hitch-hikers."

The burlap bands (Fig. 1) were placed at heights of eight feet above the ground where they would not be disturbed by the public. The burlap bands

were monitored during the weeks of June 19-22, July 3-5, and July 31-August 2, 1979. All bands were removed following the third examination.

4. All larvae and pupae found under the burlap bands were collected to identify the parasites attacking native forest insect populations as well as the gypsy moth, if present. Specimens will be held in feeding containers until emerging as adults or parasite emergence.

One objective of this survey was to determine if introduced gypsy moth parasites utilize native forest insects as alternate hosts within the park.

RESULTS

1. Aerial survey--Small scattered areas of light to moderate defoliation were observed throughout the park. The most severe area of defoliation was observed on Hawksbill Mountain covering approximately 1000 acres. Total defoliation observed on the park covered an estimated 9000 acres. One area of scattered red pine was detected near Corbin Cabin Cutoff Trail, probably caused by lightning strikes (see attached map).

2. On-site examinations of defoliated areas were conducted on June 22, 1979. The fall cankerworm, *Alsophila pometoria* (Harr), was found to be the defoliator on Hawksbill Mountain (Fig. 2-3). An active, late instar population was causing 50-100% defoliation of the predominately oak forest on the mountain.

Stands of black locust were being defoliated by the locust leaf miner, *Xenochalepus dorsalis* (Thunberg) along the Skyline Drive throughout the park (Fig. 4-5). Tree mortality was occurring in some of the larger stands of black locust as a result of several consecutive years of defoliation.

3. Gypsy moth larvae, pupa and egg masses were not found in the burlap bands. Defoliation detected during the aerial survey was not caused by the gypsy moth as revealed by ground checks.

4. Parasite Evaluation - a variety of different parasites have been produced and will be identified this winter.

DISCUSSION AND CONCLUSIONS

Defoliation on the Shenandoah National Park does not pose a serious threat to the timber resource or aesthetic values of the park at this time. The fall cankerworm population has expanded since the detection survey the previous year. Growth loss will occur on defoliated trees, but mortality usually does not occur until several successive years of complete defoliation have occurred.

Red and fading pines suspected of containing populations of pine bark beetles were not observed.

The gypsy moth continues to threaten the timber resources on the Shenandoah National Park. Three spray blocks consisting of 4700 acres were aerially sprayed with two applications of Dimilin in May. The spray areas were approximately 30 miles north of the Shenandoah National Park.

The Virginia Division of Forestry and Virginia Department of Agriculture have reported no finds of gypsy moth larvae or pupae from tree bands. One larvae was recovered from a tree band in West Virginia adjacent to the spray area.

Aerial surveys and tree banding techniques should continue on the Shenandoah National Park to detect the presence of gypsy moth in high use visitor areas.

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Figure 1. Field crews check burlap bands placed in campgrounds to detect gypsy moth larvae and pupae.



Figure 2. Aerial view of fall cankerworm defoliation on Hawksbill Mountain.



Figure 3. Fall cankerworm larvae actively defoliating the hardwood forest on Hawksbill Mountain.



Figure 4. Aerial view of a black locust stand adjacent to the Skyline Drive defoliated by the locust leaf miner.



Figure 5. Damage to black locust foliage caused by the mining activity of the larvae and defoliation caused by the adults of the locust leaf miner.